

1.0 INTRODUCTION

1.1 PURPOSE

This document shall serve as the Interface Control Document (ICD) for the input of information to the Hubble Space Telescope (HST) Project Data Base (PDB). It specifies the media, content, and format of the data provided to the Mission Operations, System Information and Software (MOSES) contractor to form the Command and Telemetry Data Base (CTDB) which defines the subsystem commands and engineering telemetry parameters of the HST. The data of the CTDB is required to support programming of the command and engineering telemetry formats of HST on-board processors. The CTDB is translated by the MOSES contractor to generate the command specifications and telemetry down link formats of the HST PDB. Additionally, this document is intended to expand input formats of all data required by the MOSES contractor in the processing and assembly of updated releases of the PDB.

1.2 SCOPE

This ICD specifies the format for HST command, engineering telemetry, and calibration information which is supplied to the Project Data Base Office of the MOSES contractor. It levies no requirements on the sending or receiving organization for the structure/content of the physical data. The CTDB serves as central repository for all HST instrumentation, calibration, command and telemetry format configuration data. This document describes the data formats of the CTDB and additional input required to produce the PDB. The National Aeronautics and Space Administration (NASA)/Goddard Space Flight Center (GSFC) Code 441 has overall responsibility for data collection, validation, coordination, scheduling and delivery of the CTDB and the PDB with the required data provided via the MOSES contractor.

1.3 CHANGE CONTROL AND UPDATE PROCEDURES

This ICD constitutes an agreement between the HST Operations and Ground Systems Project, GSFC Code 441, and the ground system implementation and operations elements of signature. This ICD will be controlled by the HST Flight Projects Level 2 Configuration Control Board (CCB). Changes to this document will be made in accordance with the standards and procedures set forth by the CCB as documented in the NASA/GSFC HST Flight Projects Configuration Management Plan.

1.4 ORGANIZATION

The ST-ICD-26, Part 4 document is organized into thirteen sections.

- Section 1 introduces and defines the scope and purpose of ST-ICD-26, Part 4, Input to the Project Data Base.
- Section 2 defines the transfer media standards for tape transferred files.
- Section 3 defines the tape and/or electronic file content for the CTDB portion of the PDB input.

- Section 4 defines the tape and/or electronic file format for the CTDB portion of the PDB input.
- Sections 5, 6, 7 and 8 define the structure of inputs to the Spacecraft Automated Test System (SATS) software used to create the CTDB.
- Section 9 describes the additional files required to create the DF-224 multiplexing tables during the database run through SATS software.
- Section 10 describes the additional files required for control and augmentation of the EDB translation software.

Note: The inputs defined in Sections 5, 6, 7, 8, and 10 are required to create the Telemetry Downlink File Description (TDFD) and Command Data Specification (CMDS) files.

- Section 11 points to the files necessary for the creation of ST-ICD-26, Part 1 and Part 5 files.
- Section 12 points to the files necessary for the creation of ST-ICD-26, Part 2 files.
- Section 13 points to the files necessary for the creation of ST-ICD-26, Part 3 files.

Files and records whose definitions reside in ST-ICD-26, Parts 1, 2, and 3 are referenced in this document when the output is the same as the input.

1.5 RELATED DOCUMENTS

Reference documents are those documents that, although not a part of this document, serve to amplify and clarify its contents. The reference documents are:

- a. ST-ICD-26, Part 1: PORTS to PDB Tape Interface Control Document, Revision A; February, 1991.
- b. ST-ICD-26, Part 2: PASS to PDB Tape Interface Control Document; April, 1991.
- c. ST-ICD-26, Part 3: SOGS to PDB Tape Interface Control Document; March, 1991.
- d. ST-ICD-26, Part 5: PORTS Refurbishment System (PRS) to Space Telescope PDB Tape ICD; May 1992.
- e. MA-04: Data Base Management Plan. HST-MOSES/82-057 Rev. D July 31, 1992.

2.0 TRANSFER MEDIA

Information shall be supplied to the MOSES contractor via two transfer media: tape and inter-computer electronic transfer. The data files must comply with the following characteristics:

- a. Nine Track.
- b. American National Standards Institute (ANSI) Standard x3.27-1978 labeled tapes.
- c. 6250 Bits per Inch (BPI).
- d. Digital Equipment Corporation (DEC) TEU-77 Compatible.
- e. American Standard Code for Information Interchange (ASCII) Encoded.
- f. Blocking Factor of 50 logical records.
- g. Files will be sequential with a variable record format.

Data files described in Section 10 conform with items d through g, while data described in Sections 11-13 comply with items a through g.

3.0 COMMAND AND TELEMETRY DATA BASE CONTENT

The CTDB files shall contain the following major classifications of Command/Telemetry data:

- a. Telemetry Formats.
- b. Telemetry Measurements.
- c. Telemetry Calibrations.
- d. Commands.

- (1) Telemetry. The telemetry data in the command/telemetry data base tape includes information about the overall telemetry structures and the individual measurement parameters. The structure of each downlinked telemetry format is defined in terms of major and minor frame sizes, subframe sizes, measurement sample rates, measurement IDs and the sync pattern. Measurement information keyed to the measurement ID shall include its format, text description, auto-assign status flag, and spacecraft origination point information.
- (2) Telemetry Calibrations. The calibrations data include information regarding decimal count to Engineering Unit (EU) conversion and EU to be applied, decimal count to English state conversion, and types of conversion being applied, whether polynomial, exponential, linear, or look-up table.
- (3) Commands. The commands data include information regarding command function number, command mnemonic, command name, command criticality, command verification(s), command operations codes, and command function code bits.